

DAVI172SequenceListing.txt  
SEQUENCE LISTING

<110> Dale, James Langham  
Echeverria, Santy Peraza

<120> BANANA RESISTANCE GENES AND USES THEREOF

<130> DAVI172.006APC

<140> 10/573,372  
<141> 2006-10-31

<150> PCT/AU2004/001300  
<151> 2004-09-23

<150> AU 2003/905222  
<151> 2003-09-25

<160> 4

<170> PatentIn version 3.3

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<212> DNA  
<213> Musa acuminata

<220>  
<221> CDS  
<222> (1)..(4323)

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1 5 10 15	
cag acg ttg ctc gac aag gcc agc aac tgc gcg atc caa caa ctc gcg	96
Gln Thr Leu Leu Asp Lys Ala Ser Asn Cys Ala Ile Gln Gln Leu Ala	
20 25 30	
cgg cgc cgc ggc ctt cac gat gac ctg agg cgg ctg cgg acg tct ctg	144
Arg Arg Arg Gly Leu His Asp Asp Leu Arg Arg Leu Arg Thr Ser Leu	
35 40 45	
ctc cgg atc cat gcc atc ctc gac aag gca gag acg agg tgg aac cat	192
Leu Arg Ile His Ala Ile Leu Asp Lys Ala Glu Thr Arg Trp Asn His	
50 55 60	
aaa aac acg agc ttg gtg gag ctg gtg agg cag ctc aag gat gct gcc	240
Lys Asn Thr Ser Leu Val Glu Leu Val Arg Gln Leu Lys Asp Ala Ala	
65 70 75 80	
tat gac gcc gag gac tta ctg gag gag ttg gag tac caa gcc gcg aag	288
Tyr Asp Ala Glu Asp Leu Leu Glu Glu Leu Glu Tyr Gln Ala Ala Lys	
85 90 95	
caa aag gtc gag cac cgg gga gac cag ata agc gac ctc ttt tct ttt	336
Gln Lys Val Glu His Arg Gly Asp Gln Ile Ser Asp Leu Phe Ser Phe	
100 105 110	
tcc ctt agt act gcg agc gag tgg ttg ggt gcc gat ggt gat gat gct	384
Ser Leu Ser Thr Ala Ser Glu Trp Leu Gly Ala Asp Gly Asp Asp Ala	

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115	120	125	
ggg act cga ttg agg gag atc cag ggg aag ctg tgc aac att gct gcc Gly Thr Arg Leu Arg Glu Ile Gln Gly Lys Leu Cys Asn Ile Ala Ala	130	135	432
gat atg atg gat gtc atg cag cta ttg gca ccc gat gat ggg ggg aga Asp Met Met Asp Val Met Gln Leu Leu Ala Pro Asp Asp Gly Gly Arg	145	150	480
caa ttc gac tgg aag gtg gtg aga aga gaa acg agc tct ttc ttg acc Gln Phe Asp Trp Lys Val Val Arg Arg Glu Thr Ser Ser Phe Leu Thr	165	170	528
gaa acc gtc gtg ttt ggt cgg gac caa gaa agg gag aaa gta gta gaa Glu Thr Val Val Phe Gly Arg Asp Gln Glu Arg Glu Lys Val Val Glu	180	185	576
ttg ctg ttg gat tca gga tct ggt aac agt agc ttc tct gtc tta ccc Leu Leu Leu Asp Ser Gly Ser Gly Asn Ser Ser Phe Ser Val Leu Pro	195	200	624
ctc gtc gga atc gga ggg gtt ggg aag acg act ctg gct cag ctc gtg Leu Val Gly Ile Gly Gly Val Gly Lys Thr Thr Leu Ala Gln Leu Val	210	215	672
tac aac gac aat cgt gtc ggc aac tat ttc cac ctc aag gtt tgg gtc Tyr Asn Asp Asn Arg Val Gly Asn Tyr Phe His Leu Lys Val Trp Val	225	230	720
tgt gta tcc gac aat ttc aat gtg aag aga ctg acc aaa gag ata atc Cys Val Ser Asp Asn Phe Asn Val Lys Arg Leu Thr Lys Glu Ile Ile	245	250	768
gag tct gct acc aag gtg gaa caa tct gac aaa ttg aac ttg gac acc Glu Ser Ala Thr Lys Val Glu Gln Ser Asp Lys Leu Asn Leu Asp Thr	260	265	816
ctg caa cag atc ctc aag gag aag att gct tca gag agg ttt ctg cta Leu Gln Gln Ile Leu Lys Glu Lys Ile Ala Ser Glu Arg Phe Leu Leu	275	280	864
gtc ctc gat gat gtg tgg agc gaa aac agg gat gac tgg gaa agg ctg Val Leu Asp Asp Val Trp Ser Glu Asn Arg Asp Asp Trp Glu Arg Leu	290	295	912
tgc gca cca cta agg ttt gca gca aga ggc agc aag gtt ata gtc aca Cys Ala Pro Leu Arg Phe Ala Ala Arg Gly Ser Lys Val Ile Val Thr	305	310	960
act cga gac aca aag att gcc agc atc att ggc aca atg aag gaa att Thr Arg Asp Thr Lys Ile Ala Ser Ile Ile Gly Thr Met Lys Glu Ile	325	330	1008
tcg ctc gat ggt ctc cag gat gat gct tac tgg gag ctg ttc aag aaa Ser Leu Asp Gly Leu Gln Asp Asp Ala Tyr Trp Glu Leu Phe Lys Lys	340	345	1056
tgt gca ttt ggt tct gtg aac ccc cag gag cat cta gag ctc gag gtt Cys Ala Phe Gly Ser Val Asn Pro Gln Glu His Leu Glu Leu Glu Val	355	360	1104
atc ggt aga aag att gct ggt aag ttg aag ggc tca ccg cta gca gca			1152

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Ile	Gly	Arg	Lys	Ile	Ala	Gly	Lys	Leu	Lys	Gly	Ser	Pro	Leu	Ala	Ala		
370						375					380						
aaa	aca	cta	gga	agc	ttg	ttg	cgg	ttg	gat	gtc	agc	caa	gaa	cac	tgg	1200	
Lys	Thr	Leu	Gly	Ser	Leu	Leu	Arg	Leu	Asp	Val	Ser	Gln	Glu	His	Trp	400	
385					390					395							
aga	act	ata	atg	gaa	agt	gag	gta	tgg	caa	ctg	cca	caa	gct	gaa	aat	1248	
Arg	Thr	Ile	Met	Glu	Ser	Glu	Val	Trp	Gln	Leu	Pro	Gln	Ala	Glu	Asn	415	
				405					410					415			
gaa	ata	ttg	cct	gtt	cta	tgg	ctg	agc	tat	caa	cac	ctt	ccc	gga	cat	1296	
Glu	Ile	Leu	Pro	Val	Leu	Trp	Leu	Ser	Tyr	Gln	His	Leu	Pro	Gly	His	430	
			420					425					430				
ctt	aga	cag	tgt	ttc	gct	ttt	tgc	gct	gtg	ttt	cac	aaa	gat	tat	tta	1344	
Leu	Arg	Gln	Cys	Phe	Ala	Phe	Cys	Ala	Val	Phe	His	Lys	Asp	Tyr	Leu	445	
		435					440					445					
ttc	tat	aaa	cat	gag	ttg	atc	cag	act	tgg	att	gca	gaa	ggc	ttc	att	1392	
Phe	Tyr	Lys	His	Glu	Leu	Ile	Gln	Thr	Trp	Ile	Ala	Glu	Gly	Phe	Ile	460	
	450					455					460						
gca	cat	caa	gga	aac	aag	agg	atg	gaa	gat	gtc	gga	agc	agc	tac	ttc	1440	
Ala	His	Gln	Gly	Asn	Lys	Arg	Met	Glu	Asp	Val	Gly	Ser	Ser	Tyr	Phe	480	
465					470					475							
cat	gag	ctt	gtt	aat	agg	tct	ttc	ttt	cag	gaa	tct	cgg	tgg	aga	ggg	1488	
His	Glu	Leu	Val	Asn	Arg	Ser	Phe	Phe	Gln	Glu	Ser	Arg	Trp	Arg	Gly	495	
				485					490					495			
cga	tat	gtg	atg	cat	gac	ctc	ata	cac	gat	ctt	gcc	caa	ttt	ata	tca	1536	
Arg	Tyr	Val	Met	His	Asp	Leu	Ile	His	Asp	Leu	Ala	Gln	Phe	Ile	Ser	510	
			500					505					510				
gtg	gga	gag	tgt	cat	agg	ata	gat	gat	gac	aag	tcc	aaa	gag	acc	cct	1584	
Val	Gly	Glu	Cys	His	Arg	Ile	Asp	Asp	Asp	Lys	Ser	Lys	Glu	Thr	Pro	525	
		515					520					525					
agt	acg	act	cgt	cat	cta	tca	gta	gca	tta	act	gag	caa	atg	aag	ttg	1632	
Ser	Thr	Thr	Arg	His	Leu	Ser	Val	Ala	Leu	Thr	Glu	Gln	Met	Lys	Leu	540	
	530					535					540						
gtg	gat	ttt	tca	ggt	tac	aat	aaa	ttg	cgg	acc	ctt	atg	atc	aac	aat	1680	
Val	Asp	Phe	Ser	Gly	Tyr	Asn	Lys	Leu	Arg	Thr	Leu	Met	Ile	Asn	Asn	560	
				550						555							
cag	aga	aat	cag	tat	cca	tat	atg	act	aaa	gtc	aac	agc	tgc	ttg	ttg	1728	
Gln	Arg	Asn	Gln	Tyr	Pro	Tyr	Met	Thr	Lys	Val	Asn	Ser	Cys	Leu	Leu	575	
				565					570					575			
cct	cat	agc	ttg	ttc	aaa	aga	ctg	aaa	aga	atc	cat	gtt	tta	gtt	ttg	1776	
Pro	His	Ser	Leu	Phe	Lys	Arg	Leu	Lys	Arg	Ile	His	Val	Leu	Val	Leu	590	
			580					585					590				
cag	aag	tgt	ggc	atg	aaa	gag	ttg	cct	gat	att	atc	ggt	gac	ttg	ata	1824	
Gln	Lys	Cys	Gly	Met	Lys	Glu	Leu	Pro	Asp	Ile	Ile	Gly	Asp	Leu	Ile	605	
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caa	ctt	cgg	tac	ctt	gac	ata	tcc	tac	aat	gct	tgc	att	cag	agg	ttg	1872	
Gln	Leu	Arg	Tyr	Leu	Asp	Ile	Ser	Tyr	Asn	Ala	Cys	Ile	Gln	Arg	Leu	620	
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ccc Pro 625	gag Glu	tca Ser	ttg Leu	tgc Cys	gac Asp 630	ctt Leu	tac Tyr	aat Asn	ctg Leu	caa Gln 635	gca Ala	ctg Leu	agg Arg	cta Leu	tgg Trp 640	1920
ggc Gly	tgt Cys	caa Gln	tta Leu	cgg Arg 645	agt Ser	ttc Phe	cca Pro	caa Gln	ggc Gly 650	atg Met	agc Ser	aag Lys	ctg Leu	atc Ile 655	aac Asn	1968
ttg Leu	agg Arg	caa Gln	ctt Leu 660	cgt Arg	gta Val	gaa Glu	gat Asp	gag Glu 665	ata Ile	att Ile	tcc Ser	aag Lys	ata Ile 670	tat Tyr	gag Glu	2016
gtt Val	ggg Gly	aag Lys 675	ctg Leu	att Ile	tct Ser	ctg Leu	caa Gln 680	gaa Glu	ttg Leu	tct Ser	gca Ala	ttc Phe 685	aaa Lys	gtg Val	cta Leu	2064
aat Asn 690	aat Asn	cat His	gga Gly	aac Asn	aaa Lys	ctt Leu 695	gca Ala	gaa Glu	cta Leu	agt Ser	ggg Gly 700	ttg Leu	aca Thr	caa Gln	ctc Leu	2112
cgc Arg 705	agc Ser	act Thr	cta Leu	cga Arg	att Ile 710	aca Thr	aat Asn	ctt Leu	gaa Glu	aat Asn 715	gta Val	ggg Gly	agt Ser	aaa Lys	gaa Glu 720	2160
gaa Glu	gca Ala	agc Ser	aag Lys	gct Ala 725	aaa Lys	ctg Leu	cac His	agg Arg	aaa Lys 730	cag Gln	tat Tyr	ctt Leu	gaa Glu	gca Ala 735	tta Leu	2208
gag Glu	tta Leu	gag Glu	tgg Trp 740	gca Ala	gct Ala	ggc Gly	cag Gln	gtt Val 745	tcc Ser	agc Ser	ttg Leu	gag Glu	cat His 750	gag Glu	tta Leu	2256
ctt Leu	gtc Val	tgc Ser 755	gag Glu	gaa Glu	gta Val	ctt Leu	tta Leu 760	ggg Gly	ctc Leu	caa Gln	cca Pro	cat His 765	cac His	ttc Phe	ctc Leu	2304
aaa Lys 770	agt Ser	ttg Leu	aca Thr	atc Ile	aga Arg	ggg Gly 775	tac Tyr	agt Ser	ggg Gly	gca Ala	aca Thr 780	gta Val	ccc Pro	agt Ser	tgg Trp	2352
ctg Leu 785	gat Asp	gtg Val	aaa Lys	atg Met	cta Leu 790	ccg Pro	aac Asn	ttg Leu	gga Gly	act Thr 795	ctt Leu	aaa Lys	cta Leu	gag Glu	aac Asn 800	2400
tgt Cys	aca Thr	aga Arg	ctg Leu	gag Glu 805	ggg Gly	ctt Leu	tca Ser	tat Tyr	att Ile 810	gga Gly	caa Gln	ctg Leu	cca Pro	cat His 815	ctc Leu	2448
aag Lys	gtc Val	ctt Leu	cat His 820	atg Met	aag Lys	aga Arg	atg Met	cct Pro 825	gtg Val	gtg Val	aaa Lys	caa Gln	atg Met 830	agt Ser	cat His	2496
gaa Glu	tta Leu	tgt Cys 835	ggc Gly	tgt Cys	acg Thr	aaa Lys	agc Ser 840	aag Lys	ttg Leu	ttc Phe	cct Pro	agg Arg 845	cta Leu	gaa Glu	gag Glu	2544
tta Leu 850	gta Val	ctg Leu	gag Glu	gat Asp	atg Met	cca Pro 855	aca Thr	ttg Leu	aaa Lys	gaa Glu	ttc Phe 860	ccg Pro	aat Asn	ctt Leu	gca Ala	2592
caa Gln 865	ctt Leu	cct Pro	tgt Cys	ctc Leu	aag Lys 870	att Ile	att Ile	cac His	atg Met	aag Lys 875	aac Asn	atg Met	ttt Phe	gca Ala	gta Val 880	2640

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aaa cat ata ggt cgt gaa tta tat ggt gat ata gag agc aat tgt ttt Lys His Ile Gly Arg Glu Leu Tyr Gly Asp Ile Glu Ser Asn Cys Phe 885 890 895	2688
cta tca tta gaa gag ctt gtg ctg cag gac atg ctg aca ttg gag gaa Leu Ser Leu Glu Glu Leu Val Leu Gln Asp Met Leu Thr Leu Glu Glu 900 905 910	2736
ctc cca aat ctt gga caa ctt cca cat ctt aag gtt att cac atg aag Leu Pro Asn Leu Gly Gln Leu Pro His Leu Lys Val Ile His Met Lys 915 920 925	2784
aac atg tct gca ctg aaa ctt ata ggt cgt gaa tta tgt gat tct aga Asn Met Ser Ala Leu Lys Leu Ile Gly Arg Glu Leu Cys Asp Ser Arg 930 935 940	2832
gag aaa att tgg ttt cct agg cta gaa gtg cta gtg ctg aag aac atg Glu Lys Ile Trp Phe Pro Arg Leu Glu Val Leu Val Leu Lys Asn Met 945 950 955 960	2880
ctg gca ctg gag gaa ctc cca agc ttg gac aac ttc cgt gtc tca aga Leu Ala Leu Glu Glu Leu Pro Ser Leu Asp Asn Phe Arg Val Ser Arg 965 970 975	2928
ttc ttc gca tcc agt gtc gaa gta ggc cat gga ctc ttt agt gct acg Phe Phe Ala Ser Ser Val Glu Val Gly His Gly Leu Phe Ser Ala Thr 980 985 990	2976
agg aat aaa tgg ttt cca agg ctg gaa gag cta gaa atc aag ggc atg Arg Asn Lys Trp Phe Pro Arg Leu Glu Glu Leu Glu Ile Lys Gly Met 995 1000 1005	3024
ctg aca ttt gag gaa ctc cat tct ctt gaa aaa ctg cca tgt ctc Leu Thr Phe Glu Glu Leu His Ser Leu Glu Lys Leu Pro Cys Leu 1010 1015 1020	3069
aag gtt ttc cgc atc aag gga ttg cca gca gtg aaa aag ata ggc Lys Val Phe Arg Ile Lys Gly Leu Pro Ala Val Lys Lys Ile Gly 1025 1030 1035	3114
cat gga tta ttt gat tct acc tgt cag aga gag tgt ttt cca agg His Gly Leu Phe Asp Ser Thr Cys Gln Arg Glu Cys Phe Pro Arg 1040 1045 1050	3159
ttg gaa gat ctc gta tta agc gac atg cca gca tgg gaa gag tgg Leu Glu Asp Leu Val Leu Ser Asp Met Pro Ala Trp Glu Glu Trp 1055 1060 1065	3204
tcg tgg gct gaa agg gag gag tta ttt tcc tgc ttg tgt aga ctt Ser Trp Ala Glu Arg Glu Glu Leu Phe Ser Cys Leu Cys Arg Leu 1070 1075 1080	3249
aaa att gaa caa tgc ccc aaa ctt aaa tgc ttg ctt ccc atc cct Lys Ile Glu Gln Cys Pro Lys Leu Lys Cys Leu Leu Pro Ile Pro 1085 1090 1095	3294
cat tct ctc ata aaa ctt gaa tta tgg caa gtt ggg ctg aca gga His Ser Leu Ile Lys Leu Glu Leu Trp Gln Val Gly Leu Thr Gly 1100 1105 1110	3339
ctt cca gga tta tgc aaa gga att ggt gga ggt agc agc act aga Leu Pro Gly Leu Cys Lys Gly Ile Gly Gly Gly Ser Ser Thr Arg 1115 1120 1125	3384

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1115	1120	1125	
act gct tct ctc tca ctc Thr Ala Ser Leu Ser Leu 1130	ttg cac att att aaa Leu His Ile Ile Lys 1135	tgt cca aat ctg Cys Pro Asn Leu 1140	3429
aga aat ctg gga gaa ggg Arg Asn Leu Gly Glu Gly 1145	ttg cta tca aac cac Leu Leu Ser Asn His 1150	ctg cca cat atc Leu Pro His Ile 1155	3474
aat gct att cgg ata tgg Asn Ala Ile Arg Ile Trp 1160	gaa tgt gct gaa ctg Glu Cys Ala Glu Leu 1165	ttg tgg ctg cct Leu Trp Leu Pro 1170	3519
gtc aag agg ttt aga gaa Val Lys Arg Phe Arg Glu 1175	ttc acc acc ctt gag Phe Thr Thr Leu Glu 1180	aac ttg tca ata Asn Leu Ser Ile 1185	3564
agg aac tgc ccc aag ctc Arg Asn Cys Pro Lys Leu 1190	atg agc atg aca cag Met Ser Met Thr Gln 1195	tgt gag gag aat Cys Glu Glu Asn 1200	3609
gac ctc ctc ctc ccg ccg Asp Leu Leu Leu Pro Pro 1205	tta atc aag gca cta Leu Ile Lys Ala Leu 1210	gaa ttg ggt gac Glu Leu Gly Asp 1215	3654
tgt gga aat ctt ggg aaa Cys Gly Asn Leu Gly Lys 1220	tcg ctg cct gga tgc Ser Leu Pro Gly Cys 1225	cta cac aac ctc Leu His Asn Leu 1230	3699
agc tca ctt act cag ttg Ser Ser Leu Thr Gln Leu 1235	gcg ata tcc aat tgt Ala Ile Ser Asn Cys 1240	cca tac atg gta Pro Tyr Met Val 1245	3744
tcc ctt cca agg gaa gta Ser Leu Pro Arg Glu Val 1250	atg ctt cac ttg aag Met Leu His Leu Lys 1255	gaa ctt gga act Glu Leu Gly Thr 1260	3789
gta agg atc gag aat tgt Val Arg Ile Glu Asn Cys 1265	gat ggg ctg gga tca Asp Gly Leu Gly Ser 1270	ata gag ggt tta Ile Glu Gly Leu 1275	3834
caa gtt ctc aaa tca ctc Gln Val Leu Lys Ser Leu 1280	aag aga ttg gca atc Lys Arg Leu Ala Ile 1285	ata gga tgt ccc Ile Gly Cys Pro 1290	3879
agg ctt ttg cta aat gaa Arg Leu Leu Leu Asn Glu 1295	ggg gat gag caa ggg Gly Asp Glu Gln Gly 1300	gag gtc ttg tca Glu Val Leu Ser 1305	3924
ctg ctt gaa tta tca gta Leu Leu Glu Leu Ser Val 1310	gat aaa aca gcc cta Asp Lys Thr Ala Leu 1315	ctt aaa ctc tca Leu Lys Leu Ser 1320	3969
ctt ata aaa aat aca cta Leu Ile Lys Asn Thr Leu 1325	cca ttc atc cat tct Pro Phe Ile His Ser 1330	ctc aga atc atc Leu Arg Ile Ile 1335	4014
tgg tct cct cag aaa gtg Trp Ser Pro Gln Lys Val 1340	atg ttt gac ttg gag Met Phe Asp Leu Glu 1345	gag gag gln gaa ttg Glu Glu Gln Glu Leu 1350	4059
gtg cac agc ctc aca gct ctc	agg cgc ctt gaa ttc	ttc ttc aga tgc	4104

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val His Ser Leu Thr Ala Leu Arg Arg Leu Glu Phe Phe Arg Cys  
 1355 1360 1365  
 aag aat ctc cag tcc ttg cca aca gag ttg cat acc ctt cct tcc 4149  
 Lys Asn Leu Gln Ser Leu Pro Thr Glu Leu His Thr Leu Pro Ser  
 1370 1375 1380  
 ctc cat gct ttg gtt gta agt gac tgc cca cag atc caa tca ctg 4194  
 Leu His Ala Leu Val Val Ser Asp Cys Pro Gln Ile Gln Ser Leu  
 1385 1390 1395  
 ccg gag aag gga ctc ccg aca ctc ctc aca gat tta gga ttt gac 4239  
 Pro Glu Lys Gly Leu Pro Thr Leu Leu Thr Asp Leu Gly Phe Asp  
 1400 1405 1410  
 cat tgc cac cca gtg ctg act gcg caa ctg gaa aag cac ctg gca 4284  
 His Cys His Pro Val Leu Thr Ala Gln Leu Glu Lys His Leu Ala  
 1415 1420 1425  
 gag atg aag agc tca ggt cga ttt cac cca gtt tat gca taggcaacat 4333  
 Glu Met Lys Ser Ser Gly Arg Phe His Pro Val Tyr Ala  
 1430 1435 1440  
 gagtgaggat ggagaaaggg gagtggaaga gaaagatttc gattgcc 4380

<210> 2  
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 <213> Musa acuminata

<400> 2

Met Ser Thr Ala Leu Val Ile Gly Gly Trp Phe Ala Gln Ser Phe Ile  
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Gln Thr Leu Leu Asp Lys Ala Ser Asn Cys Ala Ile Gln Gln Leu Ala  
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Arg Arg Arg Gly Leu His Asp Asp Leu Arg Arg Leu Arg Thr Ser Leu  
 35 40 45

Leu Arg Ile His Ala Ile Leu Asp Lys Ala Glu Thr Arg Trp Asn His  
 50 55 60

Lys Asn Thr Ser Leu Val Glu Leu Val Arg Gln Leu Lys Asp Ala Ala  
 65 70 75 80

Tyr Asp Ala Glu Asp Leu Leu Glu Glu Leu Glu Tyr Gln Ala Ala Lys  
 85 90 95

Gln Lys Val Glu His Arg Gly Asp Gln Ile Ser Asp Leu Phe Ser Phe  
 100 105 110

Ser Leu Ser Thr Ala Ser Glu Trp Leu Gly Ala Asp Gly Asp Asp Ala  
 115 120 125

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Gly Thr Arg Leu Arg Glu Ile Gln Gly Lys Leu Cys Asn Ile Ala Ala  
130 135 140

Asp Met Met Asp Val Met Gln Leu Leu Ala Pro Asp Asp Gly Gly Arg  
145 150 155 160

Gln Phe Asp Trp Lys Val Val Arg Arg Glu Thr Ser Ser Phe Leu Thr  
165 170 175

Glu Thr Val Val Phe Gly Arg Asp Gln Glu Arg Glu Lys Val Val Glu  
180 185 190

Leu Leu Leu Asp Ser Gly Ser Gly Asn Ser Ser Phe Ser Val Leu Pro  
195 200 205

Leu Val Gly Ile Gly Gly Val Gly Lys Thr Thr Leu Ala Gln Leu Val  
210 215 220

Tyr Asn Asp Asn Arg Val Gly Asn Tyr Phe His Leu Lys Val Trp Val  
225 230 235 240

Cys Val Ser Asp Asn Phe Asn Val Lys Arg Leu Thr Lys Glu Ile Ile  
245 250 255

Glu Ser Ala Thr Lys Val Glu Gln Ser Asp Lys Leu Asn Leu Asp Thr  
260 265 270

Leu Gln Gln Ile Leu Lys Glu Lys Ile Ala Ser Glu Arg Phe Leu Leu  
275 280 285

Val Leu Asp Asp Val Trp Ser Glu Asn Arg Asp Asp Trp Glu Arg Leu  
290 295 300

Cys Ala Pro Leu Arg Phe Ala Ala Arg Gly Ser Lys Val Ile Val Thr  
305 310 315 320

Thr Arg Asp Thr Lys Ile Ala Ser Ile Ile Gly Thr Met Lys Glu Ile  
325 330 335

Ser Leu Asp Gly Leu Gln Asp Asp Ala Tyr Trp Glu Leu Phe Lys Lys  
340 345 350

Cys Ala Phe Gly Ser Val Asn Pro Gln Glu His Leu Glu Leu Glu Val  
355 360 365

Ile Gly Arg Lys Ile Ala Gly Lys Leu Lys Gly Ser Pro Leu Ala Ala



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370

375

380

Lys Thr Leu Gly Ser Leu Leu Arg Leu Asp Val Ser Gln Glu His Trp  
 385 390 395 400

Arg Thr Ile Met Glu Ser Glu Val Trp Gln Leu Pro Gln Ala Glu Asn  
 405 410 415

Glu Ile Leu Pro Val Leu Trp Leu Ser Tyr Gln His Leu Pro Gly His  
 420 425 430

Leu Arg Gln Cys Phe Ala Phe Cys Ala Val Phe His Lys Asp Tyr Leu  
 435 440 445

Phe Tyr Lys His Glu Leu Ile Gln Thr Trp Ile Ala Glu Gly Phe Ile  
 450 455 460

Ala His Gln Gly Asn Lys Arg Met Glu Asp Val Gly Ser Ser Tyr Phe  
 465 470 475 480

His Glu Leu Val Asn Arg Ser Phe Phe Gln Glu Ser Arg Trp Arg Gly  
 485 490 495

Arg Tyr Val Met His Asp Leu Ile His Asp Leu Ala Gln Phe Ile Ser  
 500 505 510

Val Gly Glu Cys His Arg Ile Asp Asp Asp Lys Ser Lys Glu Thr Pro  
 515 520 525

Ser Thr Thr Arg His Leu Ser Val Ala Leu Thr Glu Gln Met Lys Leu  
 530 535 540

Val Asp Phe Ser Gly Tyr Asn Lys Leu Arg Thr Leu Met Ile Asn Asn  
 545 550 555 560

Gln Arg Asn Gln Tyr Pro Tyr Met Thr Lys Val Asn Ser Cys Leu Leu  
 565 570 575

Pro His Ser Leu Phe Lys Arg Leu Lys Arg Ile His Val Leu Val Leu  
 580 585 590

Gln Lys Cys Gly Met Lys Glu Leu Pro Asp Ile Ile Gly Asp Leu Ile  
 595 600 605

Gln Leu Arg Tyr Leu Asp Ile Ser Tyr Asn Ala Cys Ile Gln Arg Leu  
 610 615 620

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Pro Glu Ser Leu Cys Asp Leu Tyr Asn Leu Gln Ala Leu Arg Leu Trp  
 625 630 635 640  
 Gly Cys Gln Leu Arg Ser Phe Pro Gln Gly Met Ser Lys Leu Ile Asn  
 645 650 655  
 Leu Arg Gln Leu Arg Val Glu Asp Glu Ile Ile Ser Lys Ile Tyr Glu  
 660 665 670  
 Val Gly Lys Leu Ile Ser Leu Gln Glu Leu Ser Ala Phe Lys Val Leu  
 675 680 685  
 Asn Asn His Gly Asn Lys Leu Ala Glu Leu Ser Gly Leu Thr Gln Leu  
 690 695 700  
 Arg Ser Thr Leu Arg Ile Thr Asn Leu Glu Asn Val Gly Ser Lys Glu  
 705 710 715 720  
 Glu Ala Ser Lys Ala Lys Leu His Arg Lys Gln Tyr Leu Glu Ala Leu  
 725 730 735  
 Glu Leu Glu Trp Ala Ala Gly Gln Val Ser Ser Leu Glu His Glu Leu  
 740 745 750  
 Leu Val Ser Glu Glu Val Leu Leu Gly Leu Gln Pro His His Phe Leu  
 755 760 765  
 Lys Ser Leu Thr Ile Arg Gly Tyr Ser Gly Ala Thr Val Pro Ser Trp  
 770 775 780  
 Leu Asp Val Lys Met Leu Pro Asn Leu Gly Thr Leu Lys Leu Glu Asn  
 785 790 795 800  
 Cys Thr Arg Leu Glu Gly Leu Ser Tyr Ile Gly Gln Leu Pro His Leu  
 805 810 815  
 Lys Val Leu His Met Lys Arg Met Pro Val Val Lys Gln Met Ser His  
 820 825 830  
 Glu Leu Cys Gly Cys Thr Lys Ser Lys Leu Phe Pro Arg Leu Glu Glu  
 835 840 845  
 Leu Val Leu Glu Asp Met Pro Thr Leu Lys Glu Phe Pro Asn Leu Ala  
 850 855 860  
 Gln Leu Pro Cys Leu Lys Ile Ile His Met Lys Asn Met Phe Ala Val  
 865 870 875 880

DAVI172SequenceListing.txt

Lys His Ile Gly Arg Glu Leu Tyr Gly Asp Ile Glu Ser Asn Cys Phe  
                   885                  890                  895  
 Leu Ser Leu Glu Glu Leu Val Leu Gln Asp Met Leu Thr Leu Glu Glu  
                   900                  905                  910  
 Leu Pro Asn Leu Gly Gln Leu Pro His Leu Lys Val Ile His Met Lys  
                   915                  920                  925  
 Asn Met Ser Ala Leu Lys Leu Ile Gly Arg Glu Leu Cys Asp Ser Arg  
                   930                  935                  940  
 Glu Lys Ile Trp Phe Pro Arg Leu Glu Val Leu Val Leu Lys Asn Met  
                   945                  950                  955                  960  
 Leu Ala Leu Glu Glu Leu Pro Ser Leu Asp Asn Phe Arg Val Ser Arg  
                   965                  970                  975  
 Phe Phe Ala Ser Ser Val Glu Val Gly His Gly Leu Phe Ser Ala Thr  
                   980                  985                  990  
 Arg Asn Lys Trp Phe Pro Arg Leu Glu Glu Leu Glu Ile Lys Gly Met  
                   995                  1000                  1005  
 Leu Thr Phe Glu Glu Leu His Ser Leu Glu Lys Leu Pro Cys Leu  
                   1010                  1015                  1020  
 Lys Val Phe Arg Ile Lys Gly Leu Pro Ala Val Lys Lys Ile Gly  
                   1025                  1030                  1035  
 His Gly Leu Phe Asp Ser Thr Cys Gln Arg Glu Cys Phe Pro Arg  
                   1040                  1045                  1050  
 Leu Glu Asp Leu Val Leu Ser Asp Met Pro Ala Trp Glu Glu Trp  
                   1055                  1060                  1065  
 Ser Trp Ala Glu Arg Glu Glu Leu Phe Ser Cys Leu Cys Arg Leu  
                   1070                  1075                  1080  
 Lys Ile Glu Gln Cys Pro Lys Leu Lys Cys Leu Leu Pro Ile Pro  
                   1085                  1090                  1095  
 His Ser Leu Ile Lys Leu Glu Leu Trp Gln Val Gly Leu Thr Gly  
                   1100                  1105                  1110  
 Leu Pro Gly Leu Cys Lys Gly Ile Gly Gly Gly Ser Ser Thr Arg  
                   1115                  1120                  1125

DAVI172SequenceListing.txt

Thr	Ala	Ser	Leu	Ser	Leu	Leu	His	Ile	Ile	Lys	Cys	Pro	Asn	Leu
	1130					1135					1140			
Arg	Asn	Leu	Gly	Glu	Gly	Leu	Leu	Ser	Asn	His	Leu	Pro	His	Ile
	1145					1150					1155			
Asn	Ala	Ile	Arg	Ile	Trp	Glu	Cys	Ala	Glu	Leu	Leu	Trp	Leu	Pro
	1160					1165					1170			
Val	Lys	Arg	Phe	Arg	Glu	Phe	Thr	Thr	Leu	Glu	Asn	Leu	Ser	Ile
	1175					1180					1185			
Arg	Asn	Cys	Pro	Lys	Leu	Met	Ser	Met	Thr	Gln	Cys	Glu	Glu	Asn
	1190					1195					1200			
Asp	Leu	Leu	Leu	Pro	Pro	Leu	Ile	Lys	Ala	Leu	Glu	Leu	Gly	Asp
	1205					1210					1215			
Cys	Gly	Asn	Leu	Gly	Lys	Ser	Leu	Pro	Gly	Cys	Leu	His	Asn	Leu
	1220					1225					1230			
Ser	Ser	Leu	Thr	Gln	Leu	Ala	Ile	Ser	Asn	Cys	Pro	Tyr	Met	Val
	1235					1240					1245			
Ser	Leu	Pro	Arg	Glu	Val	Met	Leu	His	Leu	Lys	Glu	Leu	Gly	Thr
	1250					1255					1260			
Val	Arg	Ile	Glu	Asn	Cys	Asp	Gly	Leu	Gly	Ser	Ile	Glu	Gly	Leu
	1265					1270					1275			
Gln	Val	Leu	Lys	Ser	Leu	Lys	Arg	Leu	Ala	Ile	Ile	Gly	Cys	Pro
	1280					1285					1290			
Arg	Leu	Leu	Leu	Asn	Glu	Gly	Asp	Glu	Gln	Gly	Glu	Val	Leu	Ser
	1295					1300					1305			
Leu	Leu	Glu	Leu	Ser	Val	Asp	Lys	Thr	Ala	Leu	Leu	Lys	Leu	Ser
	1310					1315					1320			
Leu	Ile	Lys	Asn	Thr	Leu	Pro	Phe	Ile	His	Ser	Leu	Arg	Ile	Ile
	1325					1330					1335			
Trp	Ser	Pro	Gln	Lys	Val	Met	Phe	Asp	Leu	Glu	Glu	Gln	Glu	Leu
	1340					1345					1350			
Val	His	Ser	Leu	Thr	Ala	Leu	Arg	Arg	Leu	Glu	Phe	Phe	Arg	Cys

## DAVI172SequenceListing.txt

1355

1360

1365

Lys Asn Leu Gln Ser Leu Pro Thr Glu Leu His Thr Leu Pro Ser  
 1370 1375 1380

Leu His Ala Leu Val Val Ser Asp Cys Pro Gln Ile Gln Ser Leu  
 1385 1390 1395

Pro Glu Lys Gly Leu Pro Thr Leu Leu Thr Asp Leu Gly Phe Asp  
 1400 1405 1410

His Cys His Pro Val Leu Thr Ala Gln Leu Glu Lys His Leu Ala  
 1415 1420 1425

Glu Met Lys Ser Ser Gly Arg Phe His Pro Val Tyr Ala  
 1430 1435 1440

&lt;210&gt; 3

&lt;211&gt; 3699

&lt;212&gt; DNA

&lt;213&gt; Musa acuminata spp malaccensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(3696)

&lt;400&gt; 3

atg gct gat gtc aca cca cag gca gcg gcg gtc ttc tcc ctg gtg aat 48  
 Met Ala Asp Val Thr Pro Gln Ala Ala Val Phe Ser Leu Val Asn  
 1 5 10 15

gaa atc ttt aac cgg tcc atc aat ttg atc gtc gcg gaa ctg cgg ttg 96  
 Glu Ile Phe Asn Arg Ser Ile Asn Leu Ile Val Ala Glu Leu Arg Leu  
 20 25 30

cag ttg aat gcg aga gcc gag ctg aac aat ctg cag aga aca cta ttg 144  
 Gln Leu Asn Ala Arg Ala Glu Leu Asn Asn Leu Gln Arg Thr Leu Leu  
 35 40 45

agg act cac tct ctg ctc gag gag gca aag gcg agg cgg atg act gac 192  
 Arg Thr His Ser Leu Leu Glu Glu Ala Lys Ala Arg Arg Met Thr Asp  
 50 55 60

aag tct ctc gtg ctg tgg ctg atg gag ctc aag gaa tgg gcc tac gac 240  
 Lys Ser Leu Val Leu Trp Leu Met Glu Leu Lys Glu Trp Ala Tyr Asp  
 65 70 75 80

gcc gac gac atc ctc gac gag tac gag gcc gca gca atc cga ctg aag 288  
 Ala Asp Asp Ile Leu Asp Glu Tyr Glu Ala Ala Ala Ile Arg Leu Lys  
 85 90 95

gta aca cgc tcg acc ttc aaa cgt ctt atc gat cat gtg att ata aat 336  
 Val Thr Arg Ser Thr Phe Lys Arg Leu Ile Asp His Val Ile Ile Asn  
 100 105 110

gtt cca tta gcg cac aaa gta gca gac atc agg aaa agg ttg aac ggg 384

## DAVI172SequenceListing.txt

Val	Pro	Leu	Ala	His	Lys	Val	Ala	Asp	Ile	Arg	Lys	Arg	Leu	Asn	Gly		
		115					120					125					
gtc	act	ctt	gag	agg	gag	cta	aat	ctg	ggt	gcg	ctg	gaa	ggg	tcg	cag	432	
Val	Thr	Leu	Glu	Arg	Glu	Leu	Asn	Leu	Gly	Ala	Leu	Glu	Gly	Ser	Gln		
		130				135					140						
ccg	ctt	gat	tcc	acg	aaa	aga	ggt	gtg	acc	act	tct	ctt	ctg	act	gaa	480	
Pro	Leu	Asp	Ser	Thr	Lys	Arg	Gly	Val	Thr	Thr	Ser	Leu	Leu	Thr	Glu		
		145			150					155					160		
tct	tgt	att	gtc	ggg	cga	gct	caa	gat	aag	gag	aat	ttg	att	cgg	ttg	528	
Ser	Cys	Ile	Val	Gly	Arg	Ala	Gln	Asp	Lys	Glu	Asn	Leu	Ile	Arg	Leu		
				165					170					175			
ctg	ttg	gag	ccc	agc	gat	ggg	gcg	gtt	cct	gtt	gtt	cct	ata	gtt	gga	576	
Leu	Leu	Glu	Pro	Ser	Asp	Gly	Ala	Val	Pro	Val	Val	Pro	Ile	Val	Gly		
			180					185					190				
tta	gga	ggg	gca	ggg	aag	acg	act	ctg	tct	cag	ctt	atc	ttt	aat	gac	624	
Leu	Gly	Gly	Ala	Gly	Lys	Thr	Thr	Leu	Ser	Gln	Leu	Ile	Phe	Asn	Asp		
		195					200					205					
aag	aga	gtg	gag	gag	cat	ttc	cca	ttg	aga	atg	tgg	gtg	tgt	gtg	tct	672	
Lys	Arg	Val	Glu	Glu	His	Phe	Pro	Leu	Arg	Met	Trp	Val	Cys	Val	Ser		
		210				215					220						
gac	gat	ttt	gat	gtg	aag	aga	att	act	aga	gag	atc	aca	gag	tac	gcc	720	
Asp	Asp	Phe	Asp	Val	Lys	Arg	Ile	Thr	Arg	Glu	Ile	Thr	Glu	Tyr	Ala		
		225			230					235					240		
acc	aac	gga	agg	ttc	atg	gat	ctc	acc	aac	ttg	aat	atg	ctt	caa	gtt	768	
Thr	Asn	Gly	Arg	Phe	Met	Asp	Leu	Thr	Asn	Leu	Asn	Met	Leu	Gln	Val		
				245					250					255			
aat	ctg	aaa	gag	gag	ata	agg	ggg	acg	aca	ttt	ttg	ctt	gtg	ctg	gat	816	
Asn	Leu	Lys	Glu	Glu	Ile	Arg	Gly	Thr	Thr	Phe	Leu	Leu	Val	Leu	Asp		
			260				265						270				
gat	gtg	tgg	aac	gaa	gac	ccc	gtg	aag	tgg	gaa	agc	ctg	tta	gcc	cca	864	
Asp	Val	Trp	Asn	Glu	Asp	Pro	Val	Lys	Trp	Glu	Ser	Leu	Leu	Ala	Pro		
		275				280						285					
tta	gat	gcc	gga	gga	cgg	gga	agc	gtg	gtc	att	gtg	acg	aca	cag	agc	912	
Leu	Asp	Ala	Gly	Gly	Arg	Gly	Ser	Val	Val	Ile	Val	Thr	Thr	Gln	Ser		
		290				295					300						
aaa	aag	gtc	gcc	gat	gtc	acc	ggc	acg	atg	gag	cca	tac	gtt	ctc	gag	960	
Lys	Lys	Val	Ala	Asp	Val	Thr	Gly	Thr	Met	Glu	Pro	Tyr	Val	Leu	Glu		
		305			310					315				320			
gag	tta	acg	gag	gat	gac	agt	tgg	tca	ctc	atc	gag	agt	cac	tcc	ttc	1008	
Glu	Leu	Thr	Glu	Asp	Asp	Ser	Trp	Ser	Leu	Ile	Glu	Ser	His	Ser	Phe		
				325				330						335			
agg	gag	gcg	agc	tgc	tct	agt	aca	aat	cct	aga	atg	gaa	gag	atc	ggg	1056	
Arg	Glu	Ala	Ser	Cys	Ser	Ser	Thr	Asn	Pro	Arg	Met	Glu	Glu	Ile	Gly		
			340					345				350					
agg	aag	ata	gcc	aag	aag	atc	agt	ggc	cta	cct	tac	gga	gca	aca	gca	1104	
Arg	Lys	Ile	Ala	Lys	Lys	Ile	Ser	Gly	Leu	Pro	Tyr	Gly	Ala	Thr	Ala		
		355				360						365					

## DAVI172SequenceListing.txt

atg Met	ggg Gly 370	aga Arg	tat Tyr	cta Leu	aga Arg	tct Ser 375	aag Lys	cac His	gga Gly	gaa Glu	agc Ser 380	agc Ser	tgg Trp	aga Arg	gaa Glu	1152
gtc Val 385	ttg Leu	gaa Glu	act Thr	gag Glu	act Thr 390	tgg Trp	gag Glu	atg Met	cca Pro	ccg Pro 395	gct Ala	gca Ala	agt Ser	gat Asp	gtg Val 400	1200
tta Leu	tcc Ser	gct Ala	cta Leu	agg Arg 405	aga Arg	agt Ser	tac Tyr	gac Asp	aat Asn 410	cta Leu	ccc Pro	cct Pro	cag Gln	ctg Leu 415	aag Lys	1248
ctc Leu	tgt Cys	ttt Phe	gcc Ala 420	ttc Phe	tgt Cys	gct Ala	ctg Leu	ttt Phe 425	aca Thr	aag Lys	ggc Gly	tac Tyr	agg Arg 430	ttt Phe	cga Arg	1296
aag Lys	gat Asp	aca Thr 435	ctg Leu	atc Ile	cac His	atg Met	tgg Trp 440	ata Ile	gct Ala	caa Gln	aat Asn	ttg Leu 445	att Ile	caa Gln	tca Ser	1344
aca Thr 450	gag Glu	tgc Ser	aaa Lys	aga Arg	tgc Ser	gag Glu 455	gac Asp	atg Met	gca Ala	gaa Glu	gaa Glu 460	tgc Cys	ttt Phe	gat Asp	gat Asp	1392
ttg Leu 465	gtg Val	tgc Cys	aga Arg	ttc Phe	ttc Phe 470	ttt Phe	cgg Arg	tac Tyr	tcc Ser	tgg Trp 475	ggc Gly	aac Asn	tat Tyr	gtg Val	atg Met 480	1440
aat Asn	gac Asp	tca Ser	gtc Val	cat His 485	gac Asp	ctc Leu	gct Ala	cga Arg	tgg Trp 490	gtt Val	tca Ser	ttg Leu	gat Asp	gaa Glu 495	tat Tyr	1488
ttt Phe	cga Arg	gca Ala	gat Asp 500	gaa Glu	gac Asp	tca Ser	cca Pro	ttg Leu 505	cat His	att Ile	tca Ser	aag Lys	cca Pro 510	att Ile	cgt Arg	1536
cat His	ttg Leu 515	tca Ser	tgg Trp	tgc Cys	agt Ser	gaa Glu	aga Arg 520	ata Ile	acc Thr	aat Asn	gtt Val 525	ctt Leu 525	gag Glu	gat Asp	aat Asn	1584
aac Asn 530	act Thr	ggg Gly	gga Gly	gat Asp	gct Ala	gtc Val 535	aat Asn	ccg Pro	ctc Leu	agc Ser	agt Ser 540	ttg Leu	cgc Arg	act Thr	ctc Leu	1632
ctt Leu 545	ttc Phe	tta Leu	ggc Gly	caa Gln	tct Ser 550	gag Glu	ttc Phe	cgg Arg	tgc Ser	tat Tyr 555	cat His	ctt Leu	ctt Leu	gat Asp	aga Arg 560	1680
atg Met	ttc Phe	agg Arg	atg Met	ttg Leu 565	agc Ser	cga Arg	atc Ile	cgt Arg	gtt Val 570	ttg Leu	gat Asp	ttc Phe	agc Ser	aac Asn 575	tgc Cys	1728
gtc Val	ata Ile	aga Arg	aat Asn 580	ttg Leu	cct Pro	tct Ser	tgc Ser	gtt Val 585	gga Gly	aat Asn	ctg Leu	aaa Lys	cat His 590	ctg Leu	cgt Arg	1776
tac Tyr	ctg Leu	ggc Gly 595	ctg Leu	tct Ser	aat Asn	acg Thr	aga Arg 600	att Ile	caa Gln	agg Arg	ttg Leu	ccg Pro 605	gag Glu	tct Ser	gta Val	1824
aca Thr 610	cgt Arg	ctt Leu	tgc Cys	ctc Leu	ctt Leu	cag Gln 615	aca Thr	ttg Leu	cta Leu	cta Leu	gag Glu 620	ggc Gly	tgt Cys	gaa Glu	ctg Leu	1872

## DAVI172SequenceListing.txt

tgc Cys 625	agg Arg	tta Leu	cca Pro	aga Arg	agc Ser 630	atg Met	agc Ser	agg Arg	ctc Leu	gtc Val 635	aaa Lys	ctg Leu	agg Arg	cag Gln	ctc Leu 640	1920
aaa Lys	gca Ala	aat Asn	cca Pro	gat Asp 645	gta Val	att Ile	gcc Ala	gac Asp	ata Ile 650	gcc Ala	aaa Lys	gtc Val	ggg Gly	aga Arg 655	ttg Leu	1968
atc Ile	gaa Glu	ctt Leu	caa Gln 660	gag Glu	ctg Leu	aaa Lys	gcc Ala	tat Tyr 665	aat Asn	gtt Val	gac Asp	aag Lys	aaa Lys 670	aaa Lys	gga Gly	2016
cat His	ggg Gly	att Ile 675	gca Ala	gag Glu	cta Leu	agt Ser	gca Ala 680	atg Met	aat Asn	cag Gln	ctt Leu	cac His 685	ggg Gly	gat Asp	ctt Leu	2064
tcc Ser	att Ile 690	aga Arg	aac Asn	ctt Leu	caa Gln	aat Asn 695	gta Val	gag Glu	aaa Lys	acg Thr	cga Arg 700	gag Glu	tct Ser	cgg Arg	aag Lys	2112
gcg Ala 705	agg Arg	ttg Leu	gac Asp	gag Glu	aaa Lys 710	cag Gln	aag Lys	ctt Leu	aag Lys	ctc Leu 715	ttg Leu	gat Asp	ctg Leu	cga Arg	tgg Trp 720	2160
gct Ala	gac Asp	ggg Gly	agg Arg	ggg Gly 725	gcc Ala	gga Gly	gaa Glu	tgt Cys	gat Asp 730	cgt Arg	gac Asp	agg Arg	aaa Lys	gtt Val 735	ctt Leu	2208
aaa Lys	ggc Gly	ctc Leu	cga Arg 740	cca Pro	cat His	cca Pro	aac Asn	ctg Leu 745	aga Arg	gaa Glu	ttg Leu	agt Ser	atc Ile 750	aaa Lys	tac Tyr	2256
tac Tyr	gga Gly	ggc Gly 755	act Thr	tca Ser	tct Ser	ccg Pro	agt Ser 760	tgg Trp	atg Met	acg Thr	gat Asp	cag Gln 765	tat Tyr	ctg Leu	ccc Pro	2304
aac Asn 770	atg Met	gaa Glu	acg Thr	att Ile	cgc Arg	ctg Leu 775	cgt Arg	agc Ser	tgc Cys	gca Ala	agg Arg 780	ttg Leu	acg Thr	gaa Glu	ctc Leu	2352
cca Pro 785	tgt Cys	ctc Leu	ggg Gly	cag Gln	ctg Leu 790	cat His	atc Ile	ctt Leu	aga Arg	cat His 795	ttg Leu	cac His	atc Ile	gat Asp	ggg Gly 800	2400
atg Met	tcc Ser	caa Gln	gtg Val	aga Arg 805	caa Gln	att Ile	aat Asn	ctg Leu	caa Gln 810	ttt Phe	tat Tyr	ggc Gly	acc Thr	gga Gly 815	gaa Glu	2448
gtt Val	tca Ser	ggg Gly	ttt Phe 820	cca Pro	ttg Leu	ctg Leu	gag Glu	ctc Leu 825	ctg Leu	aac Asn	ata Ile	cgt Arg	cgc Arg 830	atg Met	ccc Pro	2496
agt Ser	ctg Leu	gag Glu 835	gaa Glu	tgg Trp	tcg Ser	gaa Glu	cca Pro 840	cgg Arg	aga Arg	aac Asn	tgt Cys	tgc Cys 845	tac Tyr	ttc Phe	cct Pro	2544
cgc Arg 850	ctc Leu	cat His	aaa Lys	ctg Leu	ctg Leu	atc Ile 855	gag Glu	gat Asp	tgt Cys	ccc Pro	agg Arg 860	ctc Leu	agg Arg	aat Asn	ctg Leu	2592
ccc Pro	tcc Ser	ctc Leu	cca Pro	cca Pro	aca Thr	ctg Leu	gaa Glu	gaa Glu	cta Leu	agg Arg	ata Ile	tca Ser	aga Arg	aca Thr	gga Gly	2640



## DAVI172SequenceListing.txt

865	870	875	880	
cta gtt gat ctt cca gga ttc cat gga aac ggt gat gtg acg acg aat				2688
Leu Val Asp Leu Pro Gly Phe His Gly Asn Gly Asp Val Thr Thr Asn	885	890	895	
gtt tcc ctt tct tct ttg cat gtt tcg gag tgt cga gaa ctg aga tcc				2736
Val Ser Leu Ser Ser Leu His Val Ser Glu Cys Arg Glu Leu Arg Ser	900	905	910	
cta agc gaa gga ttg ttg cag cac aac ctc gtc gcc ctc aag aca gcg				2784
Leu Ser Glu Gly Leu Leu Gln His Asn Leu Val Ala Leu Lys Thr Ala	915	920	925	
gca ttt acc gat tgt gat tct ctt gag ttt ttg ccg gcg gaa gga ttc				2832
Ala Phe Thr Asp Cys Asp Ser Leu Glu Phe Leu Pro Ala Glu Gly Phe	930	935	940	
aga aca gcc att tca ctt gaa tca ttg ata atg act aat tgt cca ctg				2880
Arg Thr Ala Ile Ser Leu Glu Ser Leu Ile Met Thr Asn Cys Pro Leu	945	950	955	960
cct tgc agt ttt ctt ttg cct tcc tct ctc gag cat cta aag ttg cag				2928
Pro Cys Ser Phe Leu Leu Pro Ser Ser Leu Glu His Leu Lys Leu Gln	965	970	975	
cca tgc ctc tat cca aac aac aat gag gat tca ctg tca aca tgc ttc				2976
Pro Cys Leu Tyr Pro Asn Asn Asn Glu Asp Ser Leu Ser Thr Cys Phe	980	985	990	
gag aac ctc aca tct ctt tcc ttc ttg gac atc aaa gat tgt cca aat				3024
Glu Asn Leu Thr Ser Leu Ser Phe Leu Asp Ile Lys Asp Cys Pro Asn	995	1000	1005	
ctg tca tca ttt cca ccg ggt cct cta tgt cag cta tca gca ctc				3069
Leu Ser Ser Phe Pro Pro Gly Pro Leu Cys Gln Leu Ser Ala Leu	1010	1015	1020	
caa cat ttg tcc ctc gtc aat tgc cag agg cta caa tct att ggc				3114
Gln His Leu Ser Leu Val Asn Cys Gln Arg Leu Gln Ser Ile Gly	1025	1030	1035	
ttc cag gca ctc acc tcc ctc gaa agc ttg aca att cag aac tgc				3159
Phe Gln Ala Leu Thr Ser Leu Glu Ser Leu Thr Ile Gln Asn Cys	1040	1045	1050	
cct cgc ctc acc atg tca cac agt ttg gtt gag gtg aat aac tct				3204
Pro Arg Leu Thr Met Ser His Ser Leu Val Glu Val Asn Asn Ser	1055	1060	1065	
tcc gat aca ggg ctc gcg ttt aat atc act cga tgg atg cgc aga				3249
Ser Asp Thr Gly Leu Ala Phe Asn Ile Thr Arg Trp Met Arg Arg	1070	1075	1080	
cga aca ggt gac gac gcc ttg atg ctc aga cac cga gca caa aat				3294
Arg Thr Gly Asp Asp Gly Leu Met Leu Arg His Arg Ala Gln Asn	1085	1090	1095	
gat tca ttt ttc ggg gga ctt ctg caa cac ctc acc ttc ctc cag				3339
Asp Ser Phe Phe Gly Gly Leu Leu Gln His Leu Thr Phe Leu Gln	1100	1105	1110	
ttt cta aag atc tgc cag tgt cca caa ctc gta acc ttc acc ggc				3384

## DAVI172SequenceListing.txt

Phe	Leu	Lys	Ile	Cys	Gln	Cys	Pro	Gln	Leu	Val	Thr	Phe	Thr	Gly	
1115						1120					1125				
gaa	gag	gaa	gag	aag	tgg	aga	aac	ctt	act	tct	ctt	caa	att	ctg	3429
Glu	Glu	Glu	Glu	Lys	Trp	Arg	Asn	Leu	Thr	Ser	Leu	Gln	Ile	Leu	
1130						1135					1140				
cac	atc	gtt	gat	tgt	cca	aac	ctg	gag	gta	ctg	cct	gca	aac	ttg	3474
His	Ile	Val	Asp	Cys	Pro	Asn	Leu	Glu	Val	Leu	Pro	Ala	Asn	Leu	
1145						1150					1155				
caa	agc	ctc	tgc	tcc	ctc	agc	acc	ttg	tac	atc	gtc	aga	tgc	cca	3519
Gln	Ser	Leu	Cys	Ser	Leu	Ser	Thr	Leu	Tyr	Ile	Val	Arg	Cys	Pro	
1160						1165					1170				
aga	atc	cat	gcg	ttt	cct	ccc	gga	ggt	gtc	agc	atg	tcc	ctg	gca	3564
Arg	Ile	His	Ala	Phe	Pro	Pro	Gly	Gly	Val	Ser	Met	Ser	Leu	Ala	
1175						1180					1185				
cat	ttg	gtc	atc	cat	gaa	tgc	cct	cag	ctg	tgt	cag	cga	tgt	gat	3609
His	Leu	Val	Ile	His	Glu	Cys	Pro	Gln	Leu	Cys	Gln	Arg	Cys	Asp	
1190						1195					1200				
cca	ccg	gga	ggt	gat	gat	tgg	ccc	tta	ata	gct	aat	gta	cca	aga	3654
Pro	Pro	Gly	Gly	Asp	Asp	Trp	Pro	Leu	Ile	Ala	Asn	Val	Pro	Arg	
1205						1210					1215				
ata	tgt	ctt	gga	agg	act	cat	cca	tgt	cgc	tgt	agc	acc	acc	tga	3699
Ile	Cys	Leu	Gly	Arg	Thr	His	Pro	Cys	Arg	Cys	Ser	Thr	Thr		
1220						1225					1230				

<210> 4  
 <211> 1232  
 <212> PRT  
 <213> Musa acuminata spp malaccensis

<400> 4

Met Ala Asp Val Thr Pro Gln Ala Ala Ala Val Phe Ser Leu Val Asn  
 1 5 10 15

Glu Ile Phe Asn Arg Ser Ile Asn Leu Ile Val Ala Glu Leu Arg Leu  
 20 25 30

Gln Leu Asn Ala Arg Ala Glu Leu Asn Asn Leu Gln Arg Thr Leu Leu  
 35 40 45

Arg Thr His Ser Leu Leu Glu Glu Ala Lys Ala Arg Arg Met Thr Asp  
 50 55 60

Lys Ser Leu Val Leu Trp Leu Met Glu Leu Lys Glu Trp Ala Tyr Asp  
 65 70 75 80

Ala Asp Asp Ile Leu Asp Glu Tyr Glu Ala Ala Ala Ile Arg Leu Lys  
 85 90 95

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Val Thr Arg Ser Thr Phe Lys Arg Leu Ile Asp His Val Ile Ile Asn  
100 105 110

Val Pro Leu Ala His Lys Val Ala Asp Ile Arg Lys Arg Leu Asn Gly  
115 120 125

Val Thr Leu Glu Arg Glu Leu Asn Leu Gly Ala Leu Glu Gly Ser Gln  
130 135 140

Pro Leu Asp Ser Thr Lys Arg Gly Val Thr Thr Ser Leu Leu Thr Glu  
145 150 155 160

Ser Cys Ile Val Gly Arg Ala Gln Asp Lys Glu Asn Leu Ile Arg Leu  
165 170 175

Leu Leu Glu Pro Ser Asp Gly Ala Val Pro Val Val Pro Ile Val Gly  
180 185 190

Leu Gly Gly Ala Gly Lys Thr Thr Leu Ser Gln Leu Ile Phe Asn Asp  
195 200 205

Lys Arg Val Glu Glu His Phe Pro Leu Arg Met Trp Val Cys Val Ser  
210 215 220

Asp Asp Phe Asp Val Lys Arg Ile Thr Arg Glu Ile Thr Glu Tyr Ala  
225 230 235 240

Thr Asn Gly Arg Phe Met Asp Leu Thr Asn Leu Asn Met Leu Gln Val  
245 250 255

Asn Leu Lys Glu Glu Ile Arg Gly Thr Thr Phe Leu Leu Val Leu Asp  
260 265 270

Asp Val Trp Asn Glu Asp Pro Val Lys Trp Glu Ser Leu Leu Ala Pro  
275 280 285

Leu Asp Ala Gly Gly Arg Gly Ser Val Val Ile Val Thr Thr Gln Ser  
290 295 300

Lys Lys Val Ala Asp Val Thr Gly Thr Met Glu Pro Tyr Val Leu Glu  
305 310 315 320

Glu Leu Thr Glu Asp Asp Ser Trp Ser Leu Ile Glu Ser His Ser Phe  
325 330 335

Arg Glu Ala Ser Cys Ser Ser Thr Asn Pro Arg Met Glu Glu Ile Gly  
340 345 350

DAVI172SequenceListing.txt

Arg Lys Ile Ala Lys Lys Ile Ser Gly Leu Pro Tyr Gly Ala Thr Ala  
355 360 365

Met Gly Arg Tyr Leu Arg Ser Lys His Gly Glu Ser Ser Trp Arg Glu  
370 375 380

Val Leu Glu Thr Glu Thr Trp Glu Met Pro Pro Ala Ala Ser Asp Val  
385 390 395 400

Leu Ser Ala Leu Arg Arg Ser Tyr Asp Asn Leu Pro Pro Gln Leu Lys  
405 410 415

Leu Cys Phe Ala Phe Cys Ala Leu Phe Thr Lys Gly Tyr Arg Phe Arg  
420 425 430

Lys Asp Thr Leu Ile His Met Trp Ile Ala Gln Asn Leu Ile Gln Ser  
435 440 445

Thr Glu Ser Lys Arg Ser Glu Asp Met Ala Glu Glu Cys Phe Asp Asp  
450 455 460

Leu Val Cys Arg Phe Phe Phe Arg Tyr Ser Trp Gly Asn Tyr Val Met  
465 470 475 480

Asn Asp Ser Val His Asp Leu Ala Arg Trp Val Ser Leu Asp Glu Tyr  
485 490 495

Phe Arg Ala Asp Glu Asp Ser Pro Leu His Ile Ser Lys Pro Ile Arg  
500 505 510

His Leu Ser Trp Cys Ser Glu Arg Ile Thr Asn Val Leu Glu Asp Asn  
515 520 525

Asn Thr Gly Gly Asp Ala Val Asn Pro Leu Ser Ser Leu Arg Thr Leu  
530 535 540

Leu Phe Leu Gly Gln Ser Glu Phe Arg Ser Tyr His Leu Leu Asp Arg  
545 550 555 560

Met Phe Arg Met Leu Ser Arg Ile Arg Val Leu Asp Phe Ser Asn Cys  
565 570 575

Val Ile Arg Asn Leu Pro Ser Ser Val Gly Asn Leu Lys His Leu Arg  
580 585 590

Tyr Leu Gly Leu Ser Asn Thr Arg Ile Gln Arg Leu Pro Glu Ser Val  
595 600 605

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Thr Arg Leu Cys Leu Leu Gln Thr Leu Leu Leu Glu Gly Cys Glu Leu  
 610 615 620  
 Cys Arg Leu Pro Arg Ser Met Ser Arg Leu Val Lys Leu Arg Gln Leu  
 625 630 635 640  
 Lys Ala Asn Pro Asp Val Ile Ala Asp Ile Ala Lys Val Gly Arg Leu  
 645 650 655  
 Ile Glu Leu Gln Glu Leu Lys Ala Tyr Asn Val Asp Lys Lys Lys Gly  
 660 665 670  
 His Gly Ile Ala Glu Leu Ser Ala Met Asn Gln Leu His Gly Asp Leu  
 675 680 685  
 Ser Ile Arg Asn Leu Gln Asn Val Glu Lys Thr Arg Glu Ser Arg Lys  
 690 695 700  
 Ala Arg Leu Asp Glu Lys Gln Lys Leu Lys Leu Leu Asp Leu Arg Trp  
 705 710 715 720  
 Ala Asp Gly Arg Gly Ala Gly Glu Cys Asp Arg Asp Arg Lys Val Leu  
 725 730 735  
 Lys Gly Leu Arg Pro His Pro Asn Leu Arg Glu Leu Ser Ile Lys Tyr  
 740 745 750  
 Tyr Gly Gly Thr Ser Ser Pro Ser Trp Met Thr Asp Gln Tyr Leu Pro  
 755 760 765  
 Asn Met Glu Thr Ile Arg Leu Arg Ser Cys Ala Arg Leu Thr Glu Leu  
 770 775 780  
 Pro Cys Leu Gly Gln Leu His Ile Leu Arg His Leu His Ile Asp Gly  
 785 790 795 800  
 Met Ser Gln Val Arg Gln Ile Asn Leu Gln Phe Tyr Gly Thr Gly Glu  
 805 810 815  
 Val Ser Gly Phe Pro Leu Leu Glu Leu Leu Asn Ile Arg Arg Met Pro  
 820 825 830  
 Ser Leu Glu Glu Trp Ser Glu Pro Arg Arg Asn Cys Cys Tyr Phe Pro  
 835 840 845  
 Arg Leu His Lys Leu Leu Ile Glu Asp Cys Pro Arg Leu Arg Asn Leu

850                      855                      860  
 Pro Ser Leu Pro Pro Thr Leu Glu Glu Leu Arg Ile Ser Arg Thr Gly  
 865                      870                      875                      880  
 Leu Val Asp Leu Pro Gly Phe His Gly Asn Gly Asp Val Thr Thr Asn  
                     885                      890                      895  
 Val Ser Leu Ser Ser Leu His Val Ser Glu Cys Arg Glu Leu Arg Ser  
                     900                      905                      910  
 Leu Ser Glu Gly Leu Leu Gln His Asn Leu Val Ala Leu Lys Thr Ala  
                     915                      920                      925  
 Ala Phe Thr Asp Cys Asp Ser Leu Glu Phe Leu Pro Ala Glu Gly Phe  
                     930                      935                      940  
 Arg Thr Ala Ile Ser Leu Glu Ser Leu Ile Met Thr Asn Cys Pro Leu  
 945                      950                      955                      960  
 Pro Cys Ser Phe Leu Leu Pro Ser Ser Leu Glu His Leu Lys Leu Gln  
                     965                      970                      975  
 Pro Cys Leu Tyr Pro Asn Asn Asn Glu Asp Ser Leu Ser Thr Cys Phe  
                     980                      985                      990  
 Glu Asn Leu Thr Ser Leu Ser Phe Leu Asp Ile Lys Asp Cys Pro Asn  
                     995                      1000                      1005  
 Leu Ser Ser Phe Pro Pro Gly Pro Leu Cys Gln Leu Ser Ala Leu  
                     1010                      1015                      1020  
 Gln His Leu Ser Leu Val Asn Cys Gln Arg Leu Gln Ser Ile Gly  
                     1025                      1030                      1035  
 Phe Gln Ala Leu Thr Ser Leu Glu Ser Leu Thr Ile Gln Asn Cys  
                     1040                      1045                      1050  
 Pro Arg Leu Thr Met Ser His Ser Leu Val Glu Val Asn Asn Ser  
                     1055                      1060                      1065  
 Ser Asp Thr Gly Leu Ala Phe Asn Ile Thr Arg Trp Met Arg Arg  
                     1070                      1075                      1080  
 Arg Thr Gly Asp Asp Gly Leu Met Leu Arg His Arg Ala Gln Asn  
                     1085                      1090                      1095

## DAVI172SequenceListing.txt

Asp	Ser	Phe	Phe	Gly	Gly	Leu	Leu	Gln	His	Leu	Thr	Phe	Leu	Gln
1100						1105					1110			
Phe	Leu	Lys	Ile	Cys	Gln	Cys	Pro	Gln	Leu	Val	Thr	Phe	Thr	Gly
1115						1120					1125			
Glu	Glu	Glu	Glu	Lys	Trp	Arg	Asn	Leu	Thr	Ser	Leu	Gln	Ile	Leu
1130						1135					1140			
His	Ile	Val	Asp	Cys	Pro	Asn	Leu	Glu	Val	Leu	Pro	Ala	Asn	Leu
1145						1150					1155			
Gln	Ser	Leu	Cys	Ser	Leu	Ser	Thr	Leu	Tyr	Ile	Val	Arg	Cys	Pro
1160						1165					1170			
Arg	Ile	His	Ala	Phe	Pro	Pro	Gly	Gly	Val	Ser	Met	Ser	Leu	Ala
1175						1180					1185			
His	Leu	Val	Ile	His	Glu	Cys	Pro	Gln	Leu	Cys	Gln	Arg	Cys	Asp
1190						1195					1200			
Pro	Pro	Gly	Gly	Asp	Asp	Trp	Pro	Leu	Ile	Ala	Asn	Val	Pro	Arg
1205						1210					1215			
Ile	Cys	Leu	Gly	Arg	Thr	His	Pro	Cys	Arg	Cys	Ser	Thr	Thr	
1220						1225					1230			